CLAIMS

[1] A radio wave propagation characteristic estimation system for estimating a radio wave propagation environment in an investigation object area, the radio wave propagation characteristic estimation system being provided, in a three-dimensional area including a plurality of contents, with a transmission source and the investigation object area to be investigated as to the propagation environment of radio waves emitted from the transmission source, the radio wave propagation characteristic estimation system comprising:

first means for finding general radio wave propagation situation within the investigation object area or in vicinity thereof;

second means for preparing finite pseudo transmission sources to simulate the general radio wave propagation situation; and

third means for conducting detailed radio wave propagation estimation by designating the finite pseudo transmission sources as new transmission sources and designating an analysis area including the investigation object area as an analysis object.

[2] The radio wave propagation characteristic estimation system according to claim 1, wherein the first means find received power at an observation point disposed in the investigation object area or in vicinity thereof, as the general radio wave propagation situation.

[3] The radio wave propagation characteristic estimation system according to claim 2, wherein

the analysis area is set so as to include the investigation object area and a plurality of contents located around the investigation object area, and

the pseudo transmission sources are prepared outside the analysis

area and near a line coupling the transmission source to the investigation object area.

[4] The radio wave propagation characteristic estimation system according to claim 2, wherein

the analysis area is set so as to be the same as the investigation object area,

the pseudo transmission sources are prepared around the investigation object area, and

transmission power of each of the pseudo transmission sources is determined on the basis of disposition situation of contents around the investigation object area.

[5] The radio wave propagation characteristic estimation system according to claim 1, wherein the first means find a radio wave arrival direction and received power corresponding to the radio wave arrival direction, at an observation point disposed in the investigation object area or in vicinity thereof, as the general radio wave propagation situation.

[6] The radio wave propagation characteristic estimation system according to claim 5, wherein

the analysis area is set so as to be the same as the investigation object area,

the pseudo transmission sources are prepared near a line extending from the observation point to the radio wave arrival direction.

[7] The radio wave propagation characteristic estimation system according to claim 1, wherein the first means find received power, a radio wave arrival direction and radio wave arrival time of each multi-path component, at an observation point disposed in the investigation object area or in vicinity thereof, as the general radio wave propagation situation.

[8]   The radio wave propagation characteristic estimation system according to claim 7, wherein

the analysis area is set so as to be the same as the investigation object area,

the pseudo transmission sources are prepared near a line extending from the observation point to the radio wave arrival direction, and

the third means take a delay corresponding to the radio wave arrival time into consideration when conducting the radio wave propagation estimation.

[9]   The radio wave propagation characteristic estimation system according to claim 1, wherein a ray tracing method is used in the radio wave propagation estimation conducted by the third means.

[10]   The radio wave propagation characteristic estimation system according to claim 1, wherein a statistical technique is used by the first means to find the general radio wave propagation situation.

[11]   The radio wave propagation characteristic estimation system according to claim 1, wherein a ray tracing method is used by the first means to find the general radio wave propagation situation.

[12]   The radio wave propagation characteristic estimation system according to claim 1, wherein an actual measurement is used by the first means to find the general radio wave propagation situation.

[13]   A radio wave propagation characteristic estimation method for estimating a radio wave propagation environment in an investigation object area, when, in a three-dimensional area including a plurality of contents, a transmission source and the investigation object area to be investigated as to the propagation environment of radio waves emitted from the transmission source are provided, the radio wave propagation characteristic

28

estimation method comprising:

a first step of finding general radio wave propagation situation within the investigation object area or in vicinity thereof;

a second step of preparing finite pseudo transmission sources to simulate the general radio wave propagation situation; and

a third step of conducting detailed radio wave propagation estimation by designating the finite pseudo transmission sources as new transmission sources and designating an analysis area including the investigation object area as an analysis object.

[14]   The radio wave propagation characteristic estimation method according to claim 13, wherein at the first step, received power at an observation point disposed in the investigation object area or in vicinity thereof is found as the general radio wave propagation situation.

[15]   The radio wave propagation characteristic estimation method according to claim 14, wherein

the analysis area is set so as to include the investigation object area and a plurality of contents located around the investigation object area, and

the pseudo transmission sources are prepared outside the analysis area and near a line coupling the transmission source to the investigation object area.

[16]   The radio wave propagation characteristic estimation method according to claim 14, wherein

the analysis area is set so as to be the same as the investigation object area,

the pseudo transmission sources are prepared around the investigation object area, and

transmission power of each of the pseudo transmission sources is

determined on the basis of disposition situation of contents around the investigation object area.

[17] The radio wave propagation characteristic estimation method according to claim 13, wherein at the first step, a radio wave arrival direction and received power corresponding to the radio wave arrival direction are found at an observation point disposed in the investigation object area or in vicinity thereof, as the general radio wave propagation situation.

[18] The radio wave propagation characteristic estimation method according to claim 17, wherein

the analysis area is set so as to be the same as the investigation object area,

the pseudo transmission sources are prepared near a line extending from the observation point to the radio wave arrival direction.

[19] The radio wave propagation characteristic estimation method according to claim 13, wherein at the first step, received power, a radio wave arrival direction and radio wave arrival time of each multi-path component are found at an observation point disposed in the investigation object area or in vicinity thereof, as the general radio wave propagation situation.

[20] The radio wave propagation characteristic estimation method according to claim 19, wherein

the analysis area is set so as to be the same as the investigation object area,

the pseudo transmission sources are prepared near a line extending from the observation point to the radio wave arrival direction, and

a delay corresponding to the radio wave arrival time is taken into consideration when conducting the radio wave propagation estimation at

30

the third step.

[21] The radio wave propagation characteristic estimation method according to claim 13, wherein a ray tracing method is used in the radio wave propagation estimation conducted at the third step.

5　　　　[22] The radio wave propagation characteristic estimation method according to claim 13, wherein a statistical technique is used at the first step to find the general radio wave propagation situation.

[23] The radio wave propagation characteristic estimation method according to claim 13, wherein a ray tracing method is used at the first step

10　to find the general radio wave propagation situation.

[24] The radio wave propagation characteristic estimation method according to claim 13, wherein an actual measurement is used at the first step to find the general radio wave propagation situation.

[25] A computer program product that, when executed, causes a

15　computer to perform a method for estimating a radio wave propagation environment in an investigation object area, when, in a three-dimensional area including a plurality of contents, a transmission source and the investigation object area to be investigated as to the propagation environment of radio waves emitted from the transmission source are

20　provided, the computer program product comprising:

processing for finding general radio wave propagation situation within the investigation object area or in vicinity thereof;

processing for preparing finite pseudo transmission sources to simulate the general radio wave propagation situation; and

25　　　　processing for conducting detailed radio wave propagation estimation by designating the finite pseudo transmission sources as new transmission sources and designating an analysis area including the

31

investigation object area as an analysis object.